Space Weather Forecast

Issued on Friday, 02 December 2022 at 13:24 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Daily chance of Moderate flares. Slight chance G1 Minor Storms, mainly early day 3 with any CME arrival.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity is Low with common-class flares observed. The strongest of these was from the spotless area to the south of the new small sunspot on the northeast limb. A small flare was also observed at the same time in the large but mature, stable and open sunspot group in the southeast. There are three other regions on the Earth-facing disc, however these are all much smaller and simpler. No Earth-directed CMEs (Coronal Mass Ejections) occurred in the last 24 hours.

Solar Wind / Geomagnetic Activity: The solar wind was indicative of the fast solar winds from a coronal hole. Wind speeds have been Elevated to Strong, throughout, but now starting to gradually declining. The strength of the magnetic field carried by the wind remains weak with the north-south component variable throughout. Geomagnetic activity was Unsettled to Active (Kp 3-4).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is forecast to be Low, but with a chance of rising to Moderate with an ongoing potential for Moderate flares, primarily from the region in the southeast.

Solar Wind / Geomagnetic Activity: Slow CME arrivals are possible, mainly early day 3 (4th), due to a CME from the 29th from a large line of plasma (filament) being released from the Sun. Although confidence is low with the timing. Ongoing coronal hole sourced fast winds are expected to only gradually decline through the period. Quiet to Unsettled geomagnetic activity expected with chance of Active intervals day 1 and day 2 (2nd or 3rd), easing to mainly Quiet by the end of the period in the absence of any significant CME arrival. Any arrival will bring the chance of a further spell of Active to G1/Minor Storm late day 2 or more likely day 3 (3rd or 4th).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to be at background with no solar radiation storms occurring.

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Met Office Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	5	20	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	25	25	25	25
Very Active	R3 to R5 X	No	2	2	2	2

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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